

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
NON-PROVISIONAL PATENT APPLICATION

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**INFLATABLE ARTICLE OF FURNITURE AND METHOD OF USING SAME**

FIELD OF THE INVENTION

[0001] The present invention relates generally to inflatable furniture, and more particularly, to inflatable furniture that is portable, storable, and transformable into various configurations.

BACKGROUND OF THE INVENTION

[0002] The use of an inflatable mattress for sleeping under various circumstances is well known. For example, people use inflatable mattresses under sleeping bags while camping or for extra sleeping space for overnight guests. Inflatable flotation devices are also known for use by swimmers and sunbathers in swimming pools and lakes. However, inflatable furniture for general use has not been well received.

[0003] To date, inflatable mattresses and other inflatable furniture have experienced several difficulties. For example, such furniture often takes inconveniently long periods of time to inflate and, when deflated, the furniture does not store easily. Additionally, inflatable devices are typically unstable for use by seated adults who are accustomed to conventional furniture. Further, currently available inflatable furniture also has problems with punctures and a lack of aesthetic appeal.

[0004] One example of currently available inflatable furniture is described in U.S. Patent No. 6,042,186 issued to Kojic et al. ("the '186 Patent"). The inflatable furniture

described in the '186 Patent comprises, *inter alia*, two polyvinylchloride (PVC) mattresses connected by a PVC hinge, a removable backrest and removable armrests. When the two inflated mattresses are rotated about the hinge into a stacked arrangement and the inflated backrest and armrests are connected, the inflated items form a small couch, loveseat or chair. When the two inflated mattresses are rotated about the hinge such that they are positioned adjacent each other in a substantially flat arrangement and the backrest and armrests are removed, the mattresses form a bed.

[0005] The hinge includes two integrally formed air passages and an integrally formed airtight seam separating the two air passages. The air passages permit air or an inflating fluid introduced into one of the mattresses to pass to the other mattress, thereby allowing both mattresses to be inflated in a single step. Since the backrest and armrests are removable, they are inflated separately from the mattresses.

[0006] While the '186 Patent does describe a useful inflatable article of furniture, such article of furniture does have some drawbacks. For example, by including the air passageways within the hinge, the volume of airflow between the mattresses is restricted or can fluctuate due to the size of the hinge, the limited expansion of the PVC during inflation, and contraction of the PVC during deflation. Such restrictions and/or fluctuations in the sizes of the air passageways can result in excessive or at least undesirable inflation and/or deflation times. Additionally, since the backrest and armrests described in the '186 Patent are detachable from the mattresses, they are more prone to being lost. Further, gaps may form between the detachable items and the mattresses, making the assembled couch, loveseat or chair uncomfortable to use.

[0007] Therefore, a need exists for an article of inflatable furniture that is easily and quickly inflated and deflated, as well as being easily storable, durable, and portable. It is also desirable to provide inflatable furniture with comfortable armrests and backrest. It is further desirable to provide inflatable furniture that easily transforms between a seat and a sleeping mattress without sacrificing comfort, durability, storability, or portability.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a front perspective view of an inflatable article of furniture in accordance with a first embodiment of the present invention, where the inflatable mattresses of the article of furniture are in a stacked arrangement and the article of furniture is in a conventional seating configuration.

[0009] FIG. 2 is a front elevational right view of the inflatable article of furniture shown in FIG. 1.

[0010] FIG. 3 is a side elevational view of the inflatable article of furniture shown in FIG. 1.

[0011] FIG. 4 is a rear elevational view of the inflatable article of furniture shown in FIG. 1.

[0012] FIG. 5 is a front, right, perspective view of an inflatable article of furniture in accordance with a second embodiment of the present invention, where the inflatable mattresses of the article of furniture are in a substantially flat arrangement and the article of furniture is in a reclined seating configuration.

[0013] FIG. 6 is a front, right, perspective view of an inflatable article of furniture in accordance with a third embodiment of the present invention, where the inflatable mattresses of the article of furniture are in an inclined lounge arrangement.

[0014] FIG. 7 is a front, right, perspective view of an inflatable article of furniture in accordance with a fourth embodiment of the present invention, where the inflatable mattresses of the article of furniture are adjacent one another in substantially flat arrangement rendering the article of furniture is in a conventional bed configuration.

[0015] FIG. 8 is a front, right, perspective view of an inflatable article of furniture in accordance with a fifth embodiment of the present invention, where the inflatable mattresses of the article of furniture are in a stacked arrangement rendering the article of furniture is in a raised bed configuration.

[0016] FIG. 9 is a side elevational view of an inflatable article of furniture in accordance with the present invention, where the inflatable mattresses are in a substantially flat arrangement and connected to an inflation device.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0017] Generally, the present invention encompasses an inflatable article of furniture and a method of using same. The inflatable article of furniture includes at least two inflatable mattresses, a hinge, and at least one air passage tube positioned external to the hinge and communicating the interiors of each of the two mattresses. The hinge connects the two mattresses together and is adapted to permit rotation of at least one of the inflatable mattresses relative to the other. The tube(s) permits passage of an inflating substance (e.g., a fluid, such as air or water) between the first inflatable mattress and the

second inflatable mattress such that both mattresses may be rapidly inflated in a single step upon introducing the inflating substance into one or the other of the mattresses. The article of furniture may optionally include a backrest and one or more armrests that are fixedly connected to one of the mattresses and integrally connected together to facilitate use of the article of furniture in several different configurations. By configuring an inflatable article of furniture in this manner, the present invention provides an article of furniture that is not only temporary, portable, storable, and transformable, but also easily, conveniently and rapidly inflated and deflated.

**[0018]** The present invention can be more readily understood with reference to FIGs. 1-9, in which like reference numerals designate like items. FIGs. 1-4 depict various elevational views of an inflatable article of furniture 100 in accordance with a first embodiment of the present invention. The article of furniture 100 includes two inflatable mattresses 1, 2, an inflatable backrest 8, and two inflatable armrests 9, 10. A hinge 5 connects the inflatable mattresses 1, 2 allowing the mattresses 1, 2 to be rotated about the hinge 5 and positioned into a stacked arrangement as illustrated in FIGs. 1-4 or other arrangements as illustrated in FIGs. 5-9 and described in more detail below. In addition, one or more tubes 3, 4 (two shown) are connected to each mattress 1, 2 to facilitate communication of an inflating substance (not shown), between the two mattresses 1, 2.

**[0019]** The tubes 3, 4 are preferably made of rubber, polyvinylchloride (PVC), or similar substance, have diameters preferably in the range of approximately 1.5 centimeters to approximately 2.5 centimeters, and have lengths preferably in the range of approximately 25 centimeters to approximately 30 centimeters. The tubes 3, 4 preferably

support a volumetric flow of approximately 10 liters per second, thereby facilitating rapid inflation and deflation of the mattresses 1, 2. While the dimensions provided above are preferred, one of skill in the art can readily determine other dimensions of the tubes 3, 4 that will provide different volumetric flow rates within the scope of this invention.

**[0020]** The mattresses 1, 2, hinge 5, backrest 8, and armrests 9, 10 are all preferably constructed of PVC, although other materials may be used. The mattresses 1, 2 preferably have substantially identical dimensions (i.e., length, width, and height), although mattresses of differing dimensions may alternatively be used.

**[0021]** The hinge 5 is preferably connected to each mattress 1, 2 using conventional high frequency welding techniques such that the hinge 5 connects an edge of one mattress 1 to the edge of the other mattress 2. The hinge 5 is fully rotatable through 180 degrees to facilitate positioning the mattresses 1, 2 in a stacked arrangement as depicted in FIGs. 1-4 and 8, or a side-by-side arrangement as depicted in FIGs. 5-7.

**[0022]** To inflate the mattresses 1, 2, an inflating substance is introduced (e.g., through an electric pump as illustrated in FIG. 9) into a sealable inflation aperture or valve 6 in one or the other of the mattresses 1, 2. Once introduced, the inflating substance freely flows between the inflatable mattresses 1, 2 through the external tubes 3, 4. The inflation valve 6 can be located in either of the inflatable air mattresses 1, 2 and is preferably positioned near one of the external tubes 1, 2, although other valve positions would be readily apparent to one having ordinary skill in the art.

**[0023]** The backrest 8 and the two armrests 9, 10 of the article of furniture 100 are integrally connected together (e.g., to form a single combined chamber) so that air or any other inflating substance communicates or passes freely between the backrest 8 and

armrests 9, 10. In addition, the backrest 8 and armrests 9, 10 are fixedly connected to one of the mattresses (e.g., mattress 1) through use of high frequency welding or other conventional process for attaching one PVC component to another. In a preferred embodiment, one of the armrests (e.g., armrest 10) includes an inflation aperture or valve 7 to accommodate introduction of an inflating substance into the backrest 8 and armrests 9, 10. The inflation valve 7 can be alternatively located in either armrest 9, 10 or in the backrest 8, as desired.

[0024] In a preferred embodiment, the inflation valves 6, 7 also operate as deflation valves when deflation of one or more of the mattresses 1, 2 and the combined armrests 9, 10 and backrest 8 is desired. The valves 6, 7 may optionally include covers (not shown) to prevent leakage of the inflating substance and provide more pleasing aesthetics. In an alternative embodiment, one of the mattresses 1, 2 and one of the armrests 9, 10 or the backrest 8, as desired, may include respective deflation apertures (not shown) to facilitate rapid deflation of the inflated items 1, 2, 8-10 depending on the particular construction of the inflation valves 6, 7.

[0025] As illustrated in FIGs. 4 and 8, two connectors 11, 12 are optionally, but preferably, used to secure the mattresses 1, 2 together when the mattresses 1, 2 are in the stacked position shown in FIGS. 1-4 and 8. When engaged, the connectors 11, 12 limit the lateral and vertical movement of each mattress 1, 2 relative to the other, thereby increasing the stability of the inflatable article of furniture 100 while in use. The connectors 11, 12 preferably comprise snap-lock or friction-fit buckles and associated straps, although other conventional connection devices such as hook and loop material, snaps, buttons and the like may be alternatively used. While two connectors 11, 12 are

depicted in FIGs. 4 and 8, any number including one, of connectors 11, 12 may be used as necessary.

[0026] As illustrated in FIGs. 4 and 8, each connector 11, 12 preferably includes a male component and a female component. The male component of each connector 11, 12 is preferably attached to one of the four inflated sides of one of the mattresses 1, 2 ( e.g., mattress 1) and the female component of each connector 11, 12 is preferably attached to an inflated side of the other mattress 2 so as to enable the male and female components of each connector 11, 12 to be fastened and unfastened as desired to retain or release the two mattresses 1, 2.

[0027] One of the benefits of the instant invention is the ability to easily change the arrangement or embodiment of the inflatable article of furniture. For example, FIG. 5 illustrates an inflatable article of furniture 200 in accordance with a second embodiment of the present invention. As illustrated in FIG. 5, the inflatable mattresses 1, 2 are in a substantially flat arrangement and the article of furniture 200 is in a modified seating configuration relative to the sofa configuration of FIGs. 1-4. In this embodiment, the inflatable mattresses 1, 2 have been rotated about the hinge 5 such that the mattresses 1, 2 are positioned adjacent to each other, the bottom surfaces of which lie on a horizontal support surface (not shown) such as a floor, and the backrest 8, and armrests 9, 10 have been inflated to essentially form a chaise lounge. The connectors 11, 12 are disconnected to facilitate rotation and orientation of the mattresses 1, 2. With the backrest 8 and the armrests 9, 10 inflated, this reclined seating arrangement allows for comfortable seating or lounging with the user's legs extended. The hinge 5 keeps the inflatable mattresses 1,



2 arranged adjacent to each other and the external tubes 3, 4 allow for free flow of the inflating substance between the inflatable mattresses 1, 2.

**[0028]** FIG. 6 illustrates an article of furniture 300 in accordance with a third embodiment of the present invention. In this reclined lounge embodiment, the embodiment of FIG. 5 is inverted such that the backrest 8 and the armrests 9, 10 are inflated and positioned so that they rest upon the floor or ground. The connectors 11, 12 are unfastened. Inflatable mattress 1 forms an inclined surface against which a person can comfortably recline. The hinge 5 ensures that the inflatable mattresses 1, 2 do not separate during use. The external tubes 3, 4 allow for equalization of pressure between the inflatable mattresses 1, 2 because the inflating substance can flow freely between the inflatable mattresses 1, 2. By adjusting the amount of air in the arm rests 9, 10 and back rest 8, the inclined elevation of the recliner can be adjusted to varying degrees of elevation. This makes the recliner aspect of the invention completely adjustable.

**[0029]** FIG. 7 shows an article of furniture 400 in accordance with a fourth embodiment of the present invention, where the inflatable mattresses 1, 2 are positioned adjacent one another in a substantially flat arrangement to form a conventional bed. In this embodiment, the connectors 11, 12 are unfastened and the inflatable mattresses 1, 2 are laid in a flat position adjacent to each other. The hinge 5 allows for this arrangement of the inflatable mattresses 1, 2 and ensures the inflatable mattresses 1, 2 do not separate during use. The backrest 8 and the armrests 9, 10 are deflated, or otherwise not used in this embodiment and, when deflated, are positioned between inflatable mattress 1 and the floor or ground so that the article of furniture 400 will lay substantially flat and allow a person to comfortably sleep on it. It is to be understood that this device may be provided

without the use of back rest 8 or arm rests 9, 10. Although not shown, by deleting the back rest 8 and arm rests 9, 10, only the configurations of FIGs 7-9 can be achieved. However, the invention's purpose of providing a sleeping or resting mattress are fulfilled thereby. It is, therefore, contemplated that the invention may exclude back rest 8 and arm rests 9, 10 altogether while still falling within the scope of the invention.

**[0030]** FIG. 8 is an inflatable article of furniture 500 in accordance with a fifth embodiment of the present invention, where the inflatable mattresses 1, 2 are in a stacked arrangement to form a raised bed. The inflatable mattresses 1, 2 are inflated, rotated about the hinge 5, and stacked upon each other. The backrest 8 and the armrests 9, 10 are deflated, excluded, or otherwise not used and, when deflated, are positioned either between the inflatable mattresses 1, 2 or between inflatable mattress 1 and the floor or ground. The connectors 11, 12 are fastened in this embodiment to limit the lateral and vertical movement of mattresses 1, 2 relative to each other.

**[0031]** FIG. 9 is a side view of an inflatable article of furniture in accordance with the present invention, where the inflatable mattresses 1, 2 are in a substantially flat arrangement and are in the process of being inflated through use of an inflation device 20 such as an air pump. To inflate the inflatable mattresses 1, 2, the inflation device 20 is attached to the mattress inflation valve 6 and operated to rapidly introduce an inflating substance, such as air, into the inflatable mattresses 1, 2 in a single step due to the presence of the external tubes 3, 4. Similarly, the inflation device 20 can be attached to inflation valve 7 to inflate the backrest 8 and the armrests 9, 10. Any commercially available inflation device 20 may be used to inflate the mattresses 1, 2 and to inflate the combination of the backrest 8 and the armrests 9, 10.

**[0032]** Tubes 3, 4 permit the inflation substance to freely pass between the interiors of mattresses 1, 2. As can be seen in the drawings, tubes 3, 4 are seemingly connected to the respective mattresses 1, 2 on side surfaces thereof. Positioning the connection points of tubes 3, 4 in this manner places tubes 3, 4 away from the user-facing surfaces of the device. In addition, it permits for the free rotation of mattresses 1, 2 about hinge 5 without bending or kinking tubes 3, 4 or stressing the connection points of tubes 3, 4 with the respective side surfaces of mattresses 1, 2.

**[0033]** As an alternative, tubes 3, 4 may be provided with a built in bend or elbow (not shown) to eliminate the tendency, if any, of tubes 3, 4 to bend during use, which may cause unwanted constriction of air flow there through.

**[0034]** Various modifications and alterations of this invention will become apparent to those skilled in the art without departing from the scope and spirit of this invention, and it is understood that this invention is not limited to the illustrative embodiments set forth hereinbefore. As used herein and in the appended claims, the terms “comprises,” “comprising” or any other variation thereof is intended to refer to a non-exclusive inclusion, such that a process, method, apparatus, or article of manufacture that comprises a list of elements does not include only those elements in the list, but may include other elements not expressly listed or inherent to such process, method, apparatus, or article of manufacture.